



ME501/ME505 datasheet

Metallux ME501/ME505 pressure sensors are made with a ceramic base plate and a flush diaphragm and work following the piezoresistive principle.

The Wheatstone bridge is screen printed on one side of the flush ceramic diaphragm which is, in turn, glued to the sensor's body. The bridge faces the inside where a cavity is made and the diaphragm's opposite side can therefore be exposed directly to the medium to be measured.

Because of the Al₂O₃ ceramic excellent chemical resistance (aggressive gases, most of solvents and acids, etc.), no additional protection is normally required.

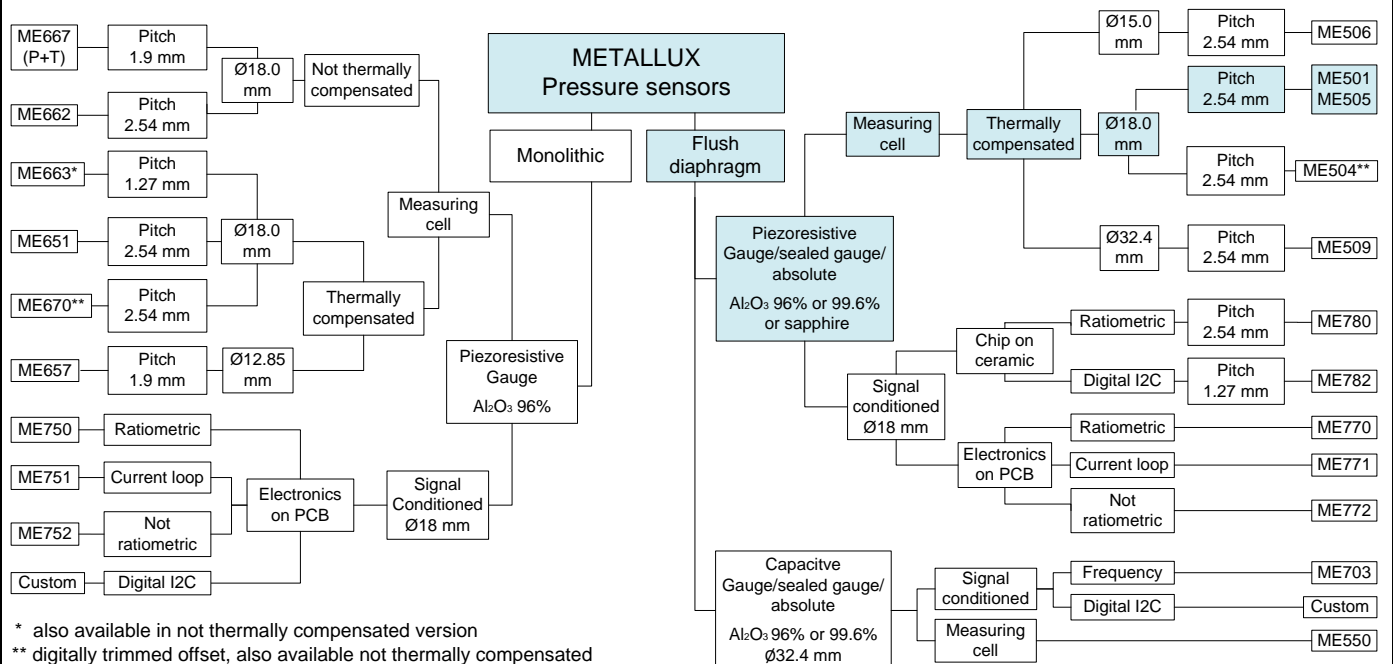
Metallux ME501/ME505 sensors are thermally compensated by laser-adjustable PTC resistors and the use of ceramic ensures a high linearity across the entire range of measurement, reducing effects of hysteresis to a minimum.

FEATURES

- Excellent resistance to corrosion and abrasion
- Absolute measurement available
- Thermally compensated
- Extended customization
- Extended choice of measuring ranges



Pressure sensors family tree



Technical characteristics

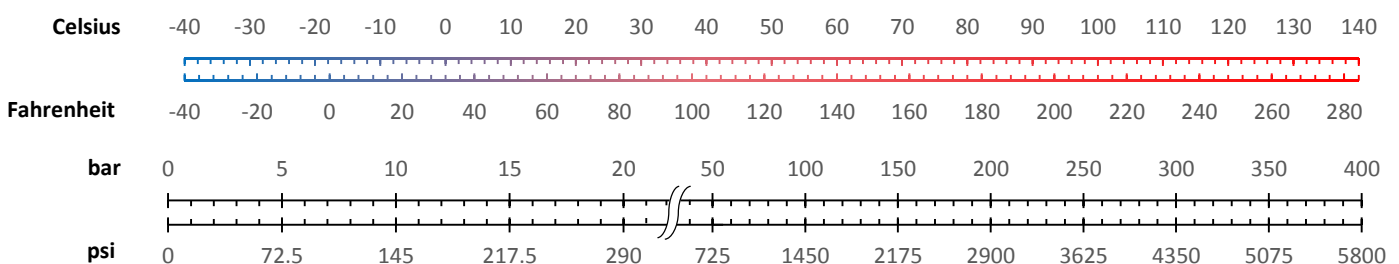
Parameters	Units	Description
Sensor type	-	Flush diaphragm, absolute (A), gauge (R) or sealed gauge (S)
Technology	-	Piezoresistive
Diaphragm material	-	Ceramic Al ₂ O ₃ 96% (standard), 99.6% or sapphire (on request)
Weight	g	≤ 8 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage	VDC	2...30
Offset	mV/V	- 0.1 ± 0.1 (Other nominal values available on request)
Current cons.	mA	≤ 1.3 @ 10V
Operating temperature	°C	-40...+135 (-40 °F...+275 °F)
Storage temperature	°C	-40...+150 (-40 °F...+302 °F)
Impedance	kΩ	11 ± 30%
Compliant with	-	REACH, RoHS, Conflict Minerals Free

		ME501							ME505				
Nominal pressure FSO	bar	0.5	1	2	5	10	20	50	100	200	400	600	800
	psi ¹	7	14	29	73	145	290	725	1450	2900	5800	8700	11600
Overload pressure	bar	1	2	4	10	15	35	100	150	350	500	750	1000
	psi ¹	14	29	58	145	217	507	1450	2175	5075	7250	10875	14500
Burst pressure	bar	2	3	6	12	20	50	120	200	500	650	950	1250
	psi ¹	29	43	87	174	290	725	1740	2900	7250	9425	13775	18125
Vacuum capability	bar	-0.1	-0.5	-0.5	-1	-1	-1	-1	-1	-1	-1	-1	-1
	psi ¹	-1.4	-7	-7	-14	-14	-14	-14	-14	-14	-14	-14	-14
Type	-	R	A / R / S	A / R / S	A / R / S	A / R / S	A / R / S	A / R / S	S	S	S	S	S
Total thickness	mm	6.15	6.17	6.23	6.30	6.35	6.55	6.70	6.70	7.05	7.32	7.55	8.05
	in	0.242	0.243	0.245	0.248	0.250	0.258	0.263	0.263	0.278	0.288	0.297	0.317
Sensitivity ²	mV/V	1.4...2.4	2.0...3.6	2.0...3.5	2.3...4.0	3.4...6.0	2.4...4.0	4.0...6.0	3.0...4.8	2.5...3.9	3.1...4.8	3.1...4.8	2.0...3.5
Accuracy ³ (typ./max.)	%FS	0.4/0.9	0.3/0.9	0.3/0.6	0.2/0.4	0.2/0.5	0.2/0.5	0.2/0.5	0.2/0.5	0.4/0.8	0.5/1.0	0.5/1.0	0.5/1.0
Thermal offset shift (typ./max.)	%FS/K	± 0.005 / ± 0.040			25 °C...85 °C				(77 °F...185 °F)				
Thermal span shift	%FS/K	≤ ± 0.010			0 °C...70 °C				(32 °F...158 °F)				
		≤ ± 0.012			-25 °C...0 °C / 70 °C...85 °C				(-13 °F...32 °F / 158 °F...185 °F)				
		≤ ± 0.014			-40 °C...-25 °C / 85 °C...135 °C				(-40 °F...-13 °F / 185 °F...275 °F)				
Reliability tests ⁴	-	1000 hours @85 °C (185 °F) & 85 %RH						500 thermal shocks -40°C...+150 °C (-40 °F... +302 °F)					
		1000 hours burn-in @150 °C (302 °F)						10 million 0 bar to P _{nom} pressure cycles					

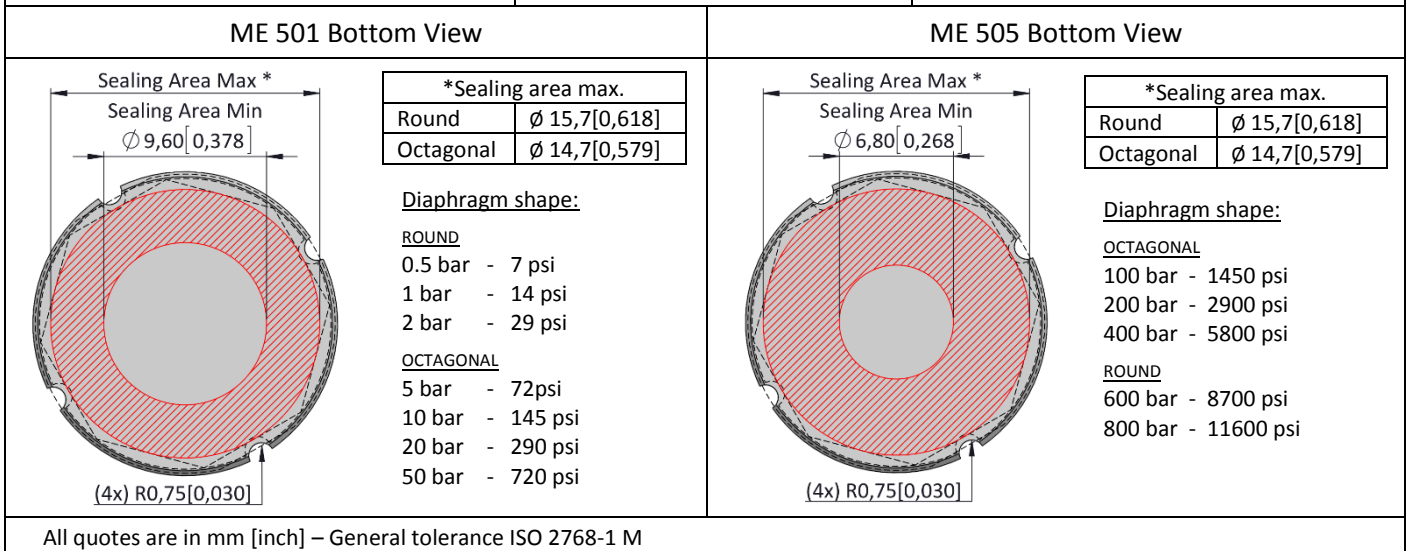
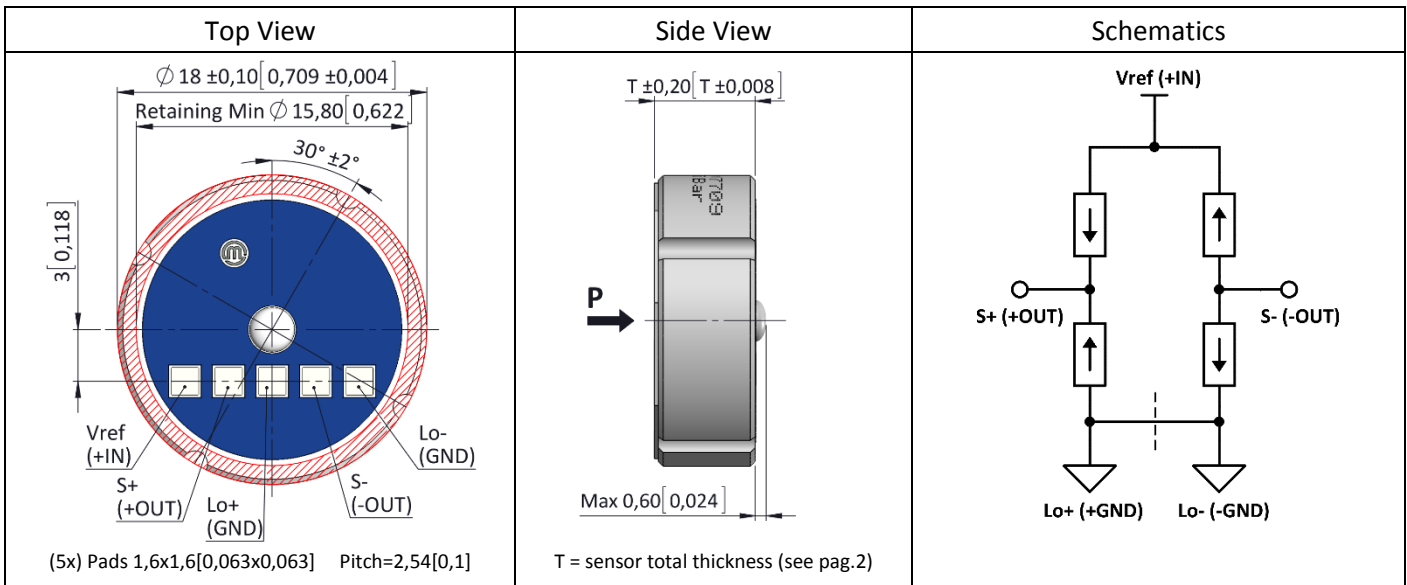
Tests performed at 25°C in Metallux housings, unless otherwise specified. Different housings may affect performances.

1. Psi values for reference only.
2. The sensitivity of each production batch is constant, within the indicated range and with minimal dispersion.
3. Accuracy = $\sqrt{\text{NonLinearity}^2 + \text{Hysteresis}^2 + \text{NonRepeatability}^2}$, terminal based.
4. All technical characteristics will remain within indicated ranges performing the above-mentioned reliability tests.

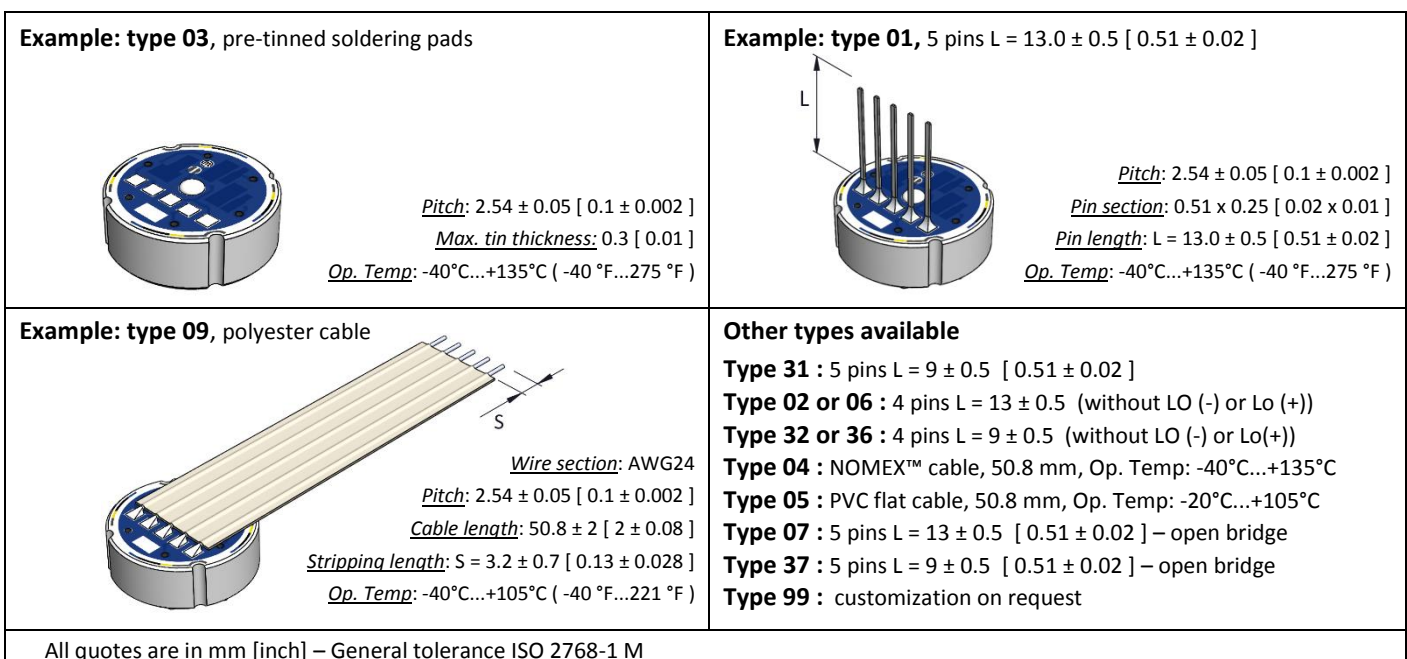
Conversion tools



Mechanical drawings and electrical schematics



Electrical terminations



Ordering code

	ME501/5	-	---	-	-	--	-
Sensor type	Absolute	A					
	Gauge	R					
	Sealed Gauge	S					
Pressure range	0...0.5 bar [0...7 psi] (ME501 -/R/-)	0p5					
	0...1 bar [0...14 psi] (ME501 A/R/S)	001					
	0...2 bar [0...29 psi] (ME501 A/R/S)	002					
	0...5 bar [0...72 psi] (ME501 A/R/S)	005					
	0...10 bar [0...145 psi] (ME501 A/R/S)	010					
	0...20 bar [0...290 psi] (ME501 A/R/S)	020					
	0...50 bar [0...720 psi] (ME501 A/R/S)	050					
	0...100 bar [0...1450 psi] (ME505 -/-/S)	100					
	0...200 bar [0...2900 psi] (ME505 -/-/S)	200					
	0...400 bar [0...5800 psi] (ME505 -/-/S)	400					
	0...600 bar [0...8700 psi] (ME505 -/-/S)	600					
	0...800 bar [0...11600 psi] (ME505 -/-/S)	800					
	Others on request (please specify)	999					
Sensitivity adjustment	Without			0			
	On request			9			
Thermal offset shift adjustment	$\leq \pm 0.06$ % FS/K (not thermally compensated)				0		
	$\leq \pm 0.04$ % FS/K				1		
	$\leq \pm 0.02$ % FS/K				2		
	Others on request (please specify)				9		
Termination type	5 pins 13 mm \pm 0.5 mm, pitch 2.54 mm						01
	5 pins 9 mm \pm 0.5 mm, pitch 2.54 mm						31
	4 pins 13 mm (without LO (-)) \pm 0.5 mm, pitch 2.54 mm						02
	4 pins 9 mm (without LO (-)) \pm 0.5 mm, pitch 2.54 mm						32
	5 pre-tinned soldering pads, pitch 2.54 mm						03
	NOMEX™ cable 50.8 mm – 5 wires, pitch 2.54 \pm 0.5 mm						04
	PVC flat cable 50.8 mm – 5 wires, pitch 1.27 mm						05
	Polyester cable 50.8 mm – 5 wires, pitch 2.54 mm						09
	4 pins 13 mm \pm 0.5 mm (without LO (+)) pitch 2.54 mm						06
	4 pins 9 mm \pm 0.5 mm (without LO (+)) pitch 2.54 mm						36
	5 pins 13 mm \pm 0.5 mm – open bridge, pitch 2.54 mm						07
	5 pins 9 mm \pm 0.5 mm – open bridge, pitch 2.54 mm						37
Others on request (please specify)						99	
Additional coating	Without						1
	Parylene coating						2
	Others on request (please specify)						9